

Abstract

The ability to accurately profile a proton and antiproton beam is necessary for further research into their collisions at Fermi National Accelerator Laboratory. To achieve these accurate results, the position of the wire, used in the Flying Wire beam profiling system, must be known as precisely as possible. In this paper, a method for finding the amount of error in the recorded position of the wire is explored and analyzed. A program, created using National Instruments LabVIEW [3], compares position readings from a resolver to the actual positions given by an optical encoder. After testing, we found that the position as reported by the resolver is typically within 10 counts of the actual position given by the optical encoder. Using the program developed this summer, the effects of speed, coupling type and other design parameters can be tested before being used in the accelerator tunnels for their overall affect on measurement accuracy.